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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MICHALSKI, JUSTIN I

ART UNIT PAPER NUMBER

2644

DATE MAILED: 12/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/839,072	Applicant(s) CASCONI ET AL.	
	Examiner Justin Michalski	Art Unit 2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24,25,29,53,54 and 58 is/are allowed.
- 6) ☒ Claim(s) 1-23,26-28,30-52 and 55-57 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-12 and 30-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Powell (US Patent 5,361,705).

Regarding Claim 1 and 30 Powell discloses an apparatus and method for synthesizing sound signal associated with a vehicle having an engine, comprising: an engine control input which artificially synthesizes, in a non-vehicle environment (Powell synthesizing sound in an amusement ride, Col. 1, lines 6-9), at least one engine control parameter characterizing a corresponding engine operating condition (Fig. 6, Tachometer 67), a vehicle control input which artificially synthesizes, in a non-vehicle environment, at least one vehicle control parameter characterizing a corresponding vehicle operating condition other than an engine operating condition (Fig. 5, gear levers 49), an engine related sound signal synthesizer (59) which generates at least one engine related sound signal corresponding to said engine control parameters (58), and a vehicle sound signal synthesizer which generates at least one vehicle sound signal corresponding to said vehicle control parameters (Powell discloses adding sound of squealing tires when excessive power is applied, Paragraph bridging paragraphs 7 and 8).

Regarding Claims 2 and 31, Powell further discloses at least one of said vehicle control parameters comprising vehicle speed (Tachometer Scaling 67).

Regarding Claims 3 and 32, Powell further discloses said vehicle sound signal corresponding to vehicle speed comprising of tire noise (Col. 7, line 48 through Col. 8, line 2).

Regarding Claims 4 and 33, Powell further discloses engine related and vehicle sound signal synthesizers are controlled independently (Powell discloses adding sound of squealing tires).

Regarding Claims 5 and 34, Powell further discloses a mixer connected to mix said engine related and vehicle sound signal together to produce combined audio output (59).

Regarding Claims 6, and 35, Powell further discloses engine control input and vehicle control input artificially synthesize at least some of said engine control and vehicle control parameters as dynamically varying inputs (Fig. 6, discloses independent inputs to Controller 64).

Regarding Claims 7 and 36, Powell further discloses engine related and vehicle sound signal synthesizers generate said engine related and vehicle sound signals concurrently (Powell discloses adding tires sound, i.e. concurrently, Col. 8, lines 1-2).

Regarding Claims 8 and 37, Powell discloses a method and apparatus for synthesizing sound signals associated with a vehicle having an engine, comprising: a vehicle control input which artificially synthesizes, in a non-vehicle environment (Powell synthesizing sound in an amusement ride, Col. 1, lines 6-9), at least one vehicle control

parameter characterizing a corresponding vehicle operating condition other than an engine operating condition (Fig. 6, Throttle input 66), and a vehicle sound signal synthesizer which generates at least one respective vehicle sound signal corresponding to said vehicle control parameters (59).

Regarding Claim 9 and 38, Powell further discloses at least one of said vehicle control parameters comprising vehicle speed (tachometer 67).

Regarding Claim 10 and 39, Powell further discloses vehicle sound signal corresponding to vehicle speed comprising of tire noise (Col. 8, lines 1-2).

Regarding claim 11 and 40, Powell further discloses generating multiple vehicle sound signals, and a mixer connected to mix said vehicle sound signals together to produce a combined audio output (Powell discloses adding tires sound, Col. 8, lines 1-2).

Regarding claim 12 and 41, Powell further discloses vehicle control input artificially synthesizes at least some of said vehicle control parameters as dynamically varying inputs (Powell disclose inputs to controller 64 as independent inputs).

3. Claims 13-15, and 42-44 are rejected under 35 U.S.C. 102(b) as being anticipated by Miller (US Patent 5,237,617).

Regarding Claim 13 and 42, Miller discloses a method and apparatus for synthesizing sound signals associated with a vehicle having an engine (Figure 1), comprising: an engine control input which artificially synthesizes, in a non-vehicle environment (Miller discloses the invention relates to sound effect generation for

producing simulated automobile engine sounds and that sound effects are often used in a variety of applications to simulate sounds which typify the general environment in which they are used such as games and simulators, Col. 1, lines 7-17), a plurality of engine control parameters characterizing respective engine control conditions (rpm parameter 22, vacuum 23, and exhaust 24), and an engine related sound synthesizer (synthesizer 32) which generates engine related sound signals (outputs 39 and 41) corresponding to said engine control parameters.

Regarding Claim 14 and 43, Miller further discloses said engine control input provides said engine control parameters to an engine process model (provided to personality module (i.e. process model 38) at digital synthesizer 32), and said engine related sound signal synthesizer generates said engine related sound (signals 39 and 41) signals in response to an output from said engine process model.

Regarding Claim 15 and 44, Miller further discloses said engine control parameters comprising at engine rotational speed (rpm signal 22), engine load (throttle signal 21), vehicle acceleration (throttle signals 21), transmission gear ratio (gear box signal 18), and throttle position (throttle signals 21).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 16-18, 21-23, 45-47, and 50-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller as applied to claims 14 and 43 above in view of Plugge et al. (US Patent 6,356,185).

Regarding Claim 45, Miller discloses a method and apparatus as stated apropos of claim 43 and 14 above including outputs (signals 39 and 41) that comprise being the function of engine load (throttle 21), and engine rotational speed signals (RPM 22).

Miller does not disclose the use of spark events in processing the signal outputs.

Plugge discloses a method and apparatus for synthesizing sounds of automobiles using an engine spark plug signal (Figure 2, signal 20). Plugge discloses that the RPM sensor 5 takes the form of an engine spark plug sensor 20 (Column 4, lines 55-58).

Therefore, it would have been obvious to use an engine spark plug sensor (i.e. spark event) as taught by Plugge in combination with Miller in order to use the spark event to obtain a signal corresponding to RPM or engine speed.

Regarding Claim 46, Miller as modified further discloses spark timing controlled sound signals (sound signals 39 and 41) which are controlled and generated in part by spark timing signal (22) are also generated in response to engine load (signal 21) and spark event (signal 22) outputs from process model (38 and 32).

Regarding Claim 47, Miller further discloses engine rotational speed sound signals (sound signals 39 and 41) are generated in response to said engine load (throttle signal 21) and engine rotational speed (rpm signal 22) outputs from said engine process model (38 and 32).

Regarding Claim 50, Miller further discloses engine rotational speed sound signals (sound signals 39 and 41) are generated in response to said engine load (throttle signal 21) and engine rotational speed (rpm signal 22) outputs from said engine process model (38 and 32).

Regarding Claim 51, Miller further discloses said engine rotational speed related sound signals (signals 39 and 41) comprise of whistles and whines. (Miller discloses the engine noise increasing in pitch with RPM (i.e. whistles, and whines) (Column 4, lines 26-28).

Regarding Claim 52, Miller as modified further discloses said engine process model comprises an engine physical model (module 38 and synthesizer 32) which generates said spark event and engine rotational speed outputs (signals 39 and 41 function of spark event and rotational speed), and a load behavior model (Miller discloses module 38 and synthesizer 32 contains behavior information) (Column 4, lines 8-25) which generates said engine load output (signals 39 and 41).

6. Claims 23-28 and 55-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller as applied to claims 14 and 43 above in view of Plugge (US Patent 6,356,185).

Regarding Claim 55, Miller discloses a method and apparatus as stated apropos of claims 14 and 43 above including an engine load signal (Figure 1, throttle signal 21) and an RPM signal (22) which cooperate to generate an engine resonance sound signal (Column 4, lines 29-46). Miller does not disclose the use of a spark event. Plugge

discloses a method and apparatus for synthesizing sounds of automobiles using an engine spark plug sensor (Figure 2, sensor 20). Plugge discloses that the RPM sensor 5 takes the form of an engine spark plug sensor 20 (Column 4, lines 55-58). Therefore, it would have been obvious to use an engine spark plug sensor (i.e. spark event) as taught by Plugge in combination with Miller in order to use the spark event to obtain a signal corresponding to RPM or engine speed.

Regarding Claim 56, Miller as modified further discloses said engine load (throttle signal 21) and spark event signals (signal 22) cooperate to generate an engine resonance sound signal (Miller discloses resonance in outputs) (Column 4, lines 29-32), and said engine load signal (throttle signal 21) and engine resonance sound signal (signal 27) cooperate to generate a turbulence sound signal (Miller discloses synthesizing exhaust noises, i.e. turbulence sound signal) (Column 4, lines 40-46).

Regarding Claim 57, Miller as modified further discloses said engine load (throttle 21) and spark event signals (signal 22) are supplied to an exhaust system model (Miller discloses synthesizer 32 produces exhaust signals) (Column 4, lines 40-43) that includes turbulence (i.e. exhaust) and filtering resonance (Column 4, line 30) models to generate said exhaust system sound signal.

7. Claims 19 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller as modified as applied to claims 18 and 47 above, and further in view of Redmann et al. (US Patent 5,633,993). Miller as modified discloses an apparatus as stated apropos of claim 47 above including engine load and engine rotational speed

outputs. Miller as modified does not disclose applying the outputs to cross-fade loops. Redmann et al. discloses a method for synthesizing sound which includes a cross-fading input channels to extend the dynamic capabilities of the controller and help localize continuous sounds (e.g. airplane engine noise) (Column 9, lines 13-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a cross-fade loop in order to help the localization of continuous sounds such as an engine noise in a vehicle simulation.

8. Claims 20 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miller as modified as applied to claim 18 and 47 above, and further in view of Takeuchi et al. (US Patent 5,998,724). Miller as modified discloses an apparatus as stated apropos of claim 47 above including engine load and engine rotational speed outputs. Miller as modified does not disclose applying the outputs to a feedback FM block. Takeuchi et al. discloses a synthesizing device including FM feedback to provide a variety of sounds from the synthesizer. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include FM feedback in order to produce a variety of sounds from a synthesizer resulting in a more natural synthesized audio signal.

Allowable Subject Matter

9. Claims 24, 25, 29, 53, 54, and 58 allowed.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin Michalski whose telephone number is (703)305-5598. The examiner can normally be reached on 8 Hours, 5 day/week.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Isen can be reached on (703)305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2644

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JIM


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PRIMARY EXAMINER